

A TAXONOMIC STUDY OF THE GENUS *ANOMALOSIPHUM* TAKAHASHI
FROM CHINA (HOMOPTERA: APHIDIDAE: GREENIDEINAE)

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Abstract.—The aphid genus *Anomalosiphum* in China is reviewed. Three species occur in China, including *A. scleroticum*, n. sp. which is described and illustrated. A key is provided to the alate viviparous females.

Key Words: Homoptera, Aphididae, Greenideinae, *Anomalosiphum*, new species, China

In the classification of the Aphidoidea, as interpreted by Raychaudhuri and Chatterjee (1980), *Anomalosiphum* is regarded as a member of the small tribe Cervaphidini within the subfamily Greenideinae. Ghosh (1982) provided a generic key to the nine genera within Cervaphidini.

The genus *Anomalosiphum* was described by Takahashi (1934) from alate viviparous females of the type species, *Anomalosiphum pithecolobii*, collected on *Pithecolobium lucidum* (Fagaceae) in Taiwan, China. Tao (1947) described a second species, *A. takahashii*, from Taiwan, China, and Ghosh et al. (1971) described a third species, *A. indigoferae*, from India. Martin and Agarwala (1994) studied the genus *Anomalosiphum* and described three new species, *A. murphyi*, *A. philippinensis* and *A. tiomanensis*. Based on Remaudière and Remaudière's (1997) catalogue, this genus comprises six species, all in Asia. In China, *Anomalosiphum* includes only three species, one of which is new.

This paper deals with the species from China, except for the information on the type species from Takahashi (1934). The specimens were collected by the author and are deposited in Zoological Museum, Institute of Zoology, Chinese Academy of Sciences.

The terminology follows Tao (1947) and Martin and Agarwala (1994). Measurements are in millimeters (mm).

Anomalosiphum Takahashi, 1934

Anomalosiphum Takahashi 1934: 54; Ghosh 1982: 83; Raychaudhuri and Chatterjee 1980: 316; Tao 1990: 105. Type species: *Anomalosiphum pithecolobii* Takahashi, 1934, by original designation.

Diagnosis.—Antenna 4-segmented in apterae and 5-segmented in alatae, secondary rhinaria semiannular. Tergites VII and VIII each with a pair of pronounced hair-bearing processes in apterae, these reduced in alatae and usually distinguishable on the tergite VIII only as large hair-bearing tubercles. Cauda transversely rounded triangular, with a pronounced median stylus in apterae which is reduced in alatae. Fore wing with median vein one branched, hind wing with one obliquus.

Embryo with dorsal hairs fan-shaped at apex, metanotum to abdominal tergite VI each with 1 pair of spinal and 1 pair of pleural hairs; thorax each with 2 pairs of marginal hairs, pronotum with 1 pair of spinal hairs; abdominal tergites I–VII each with 1 pair of marginal hairs; tergites VII and VIII each with 1 pair of spinal hairs.

Host plants.—Species of *Anomalosiphum* have been recorded colonizing members of the plant families Connaraceae, Fagaceae, Leguminosae, Mimosaceae and Polygalaceae.

Distribution.—China (Taiwan, Guangxi, Sichuan), India, Papua New Guinea, Philippines, Singapore, Western Malaysia.

KEY TO SPECIES OF *ANOMALOSIPHUM*
(ALATE VIVIPAROUS FEMALES) FROM CHINA
(INCLUDING *A. TIOMANENSIS* MARTIN)

1. Antennal segment III bearing up to 20 secondary rhinaria, often rather unevenly distributed; segments IV and V without secondary rhinaria *takahashii* Tao
- Antennal segment III bearing more than 30 secondary rhinaria, distributed over whole length of segment (Fig. 2); segment IV, and sometimes also segment V, with secondary rhinaria (Fig. 2) 2
2. Ultimate rostral segment about 1.85 times as long as second hind tarsal segment *pithecolobii* Takahashi
- Ultimate rostral segment at most 1.6 times as long as second hind tarsal segment 3
3. Antennal segment V without secondary rhinaria; ultimate rostral segment 0.47 times siphunculus length; abdominal segment VII with 1 pair of short marginal processes; spino-pleural band on abdominal tergite VII fused with an irregular brown patch on tergites III–VI; length of hair on apex of process VIII as long as process VIII *scleroticum*, n. sp.
- Antennal segment V with 1–3 secondary rhinaria; ultimate rostral segment 0.63 times length of siphunculus; abdominal segment VII without short marginal processes; tergite VII with a subtrapezoidal brown sclerite medially; length of hair on apex of process VIII 1.8 times as long as process VIII *tiomanensis* Martin

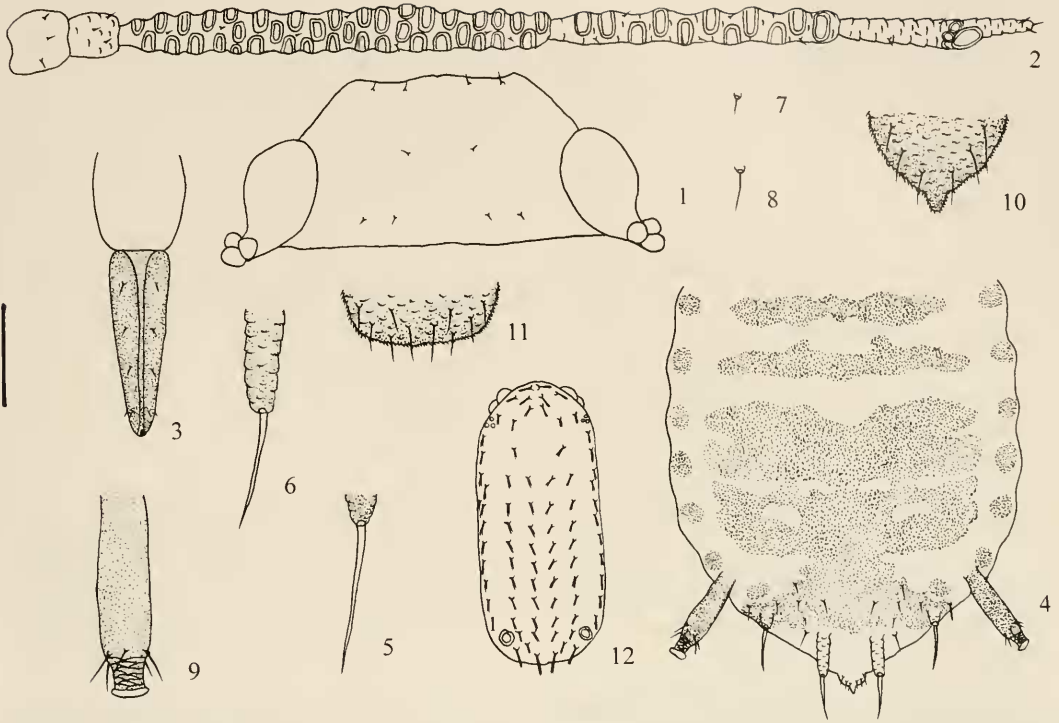
Anomalosiphum scleroticum Qiao and Zhang, new species
(Figs. 1–12)

Material examined.—*Holotype*: Alate viviparous female, No. Y1046-1-1-2, April 23, 1974, Guangxi Autonomous Region (Nanning City, 22.8°N, 108.3°E, Alt. 200 m), on *Dalbergia hupeana* Hance (Leguminosae), by Wang Zhongfu; paratype 1 alate viviparous female, No. Y1046-1-1-1,

other data same as holotype; the aphids were colonizing host plant.

Description.—*Alate viviparous female*: Body, long, elliptical. Measurements: Body 1.588 in length, 0.706 in width. Antenna 0.909, length of segments I–V: 0.062, 0.046, 0.427, 0.188, 0.139 + 0.046, respectively. Ultimate rostral segment 0.093 in length, 0.036 in basal width. Hind femur 0.319, hind tibia 0.500, 2nd hind tarsal segment 0.088 in length. Siphunculus 0.193 in length. Cauda 0.093 in length.

Mounted specimens.—Head and thorax dark brown, eye black. Antenna, apical to rostrum, legs, and siphunculi dark brown. Posterior margin of pterostigma and veins dark brown. Abdominal tergites I and II each with a transverse pigmented band; spinal and pleural patches on tergites III–VII fused with each other forming an irregular brown patch, abdominal tergites each with a pair of small sclerotic marginal patches. Venter of abdomen with spinulose stripes, abdominal tergites I, VI–VIII spinulose, antennal segments and tarsi with transverse imbrications. Dorsal hairs of body thick and short; ventral hairs long and acute, length of ventral hairs 4 times as long as dorsal hairs. Head with 2 pairs of cephalic hairs, 5 or 6 dorsal hairs; abdominal tergite VII with 12 hairs, tergite VIII with 2 hairs. Abdominal segment VII with 1 pair of short marginal processes 0.016 in length, tergite VIII with 1 pair of long spinal processes 0.057 in length, each process with a long and acute hair at apex. Length of hairs 4.33 times as long as process on abdominal segment VII, length of hairs as long as process on tergite VIII. Length of cephalic hairs 0.018, 0.44 times as widest diameter of antennal segment III. Spiracles elliptical, closed, spiracular plates black. Medial front and antennal tubercles slightly developed. Antenna 5-segmented, 0.57 times as long as body, length in proportion of segments I–V: 14, 11, 100, 44, 33 + 11. Processus terminalis 1/3 as long as base of segment V. Antennal hairs short and sharp. Antennal segments III–IV with 38–40, and 9 or 10



Figs. 1-12. *Anomalosiphum scleroticum*, alate viviparous female. 1, Dorsal view of head. 2, Antennal segments I-V. 3, Ultimate rostral segment. 4, Dorsal view of abdomen. 5, Marginal process on abdominal segment VII. 6, Medial process on abdominal tergite VIII. 7, Dorsal hair of body. 8, Ventral hair. 9, Siphunculus. 10, Cauda. 11, Anal plate. 12, Embryo. Scale bar: Figs. 1, 2, 5-11 = 0.1 mm; Fig. 3 = 0.05 mm; Figs. 4, 12 = 0.2 mm.

semiannular secondary rhinaria, respectively, distributed over whole length of each segment; segment V without secondary rhinaria. Rostrum reaching mid-coxae, length of ultimate rostral segment 2.57 times as long as its basal width, 1.06 times as long as 2nd hind tarsal segment. Legs normal. Hind femur 0.75 times as long as antennal segment III, hind tibia 0.31 times as long as body. Hairs on legs sharp, on hind tibia 0.033, 1.48 times as long as mid-width of segment. First tarsal segment chaetotaxy: 3, 3, 3. Siphunculus 0.196 in length, 0.12 times as long as body length. Cauda broad and round-triangular, bearing 6 hairs. Anal plate with 8-10 hairs. Genital plate with 8 hairs.

Embryo: Oval, 0.556 in length, 0.247 in width. Dorsal hairs of body thick and short, mushroom-shaped at apex. Head with 2

pairs of cephalic hairs, 2 pairs of spinal hairs, 1 pair of pleural and 1 pair of marginal hairs. Pronotum with 1 pair of spinal hairs and 2 pairs of marginal hairs. Mesonotum and metanotum each with 1 pair of spinal, 1 pair of pleural and 2 pairs of marginal hairs. Abdominal tergites I-V each with 1 pair of spinal, 1 pair of pleural and 1 pair of marginal hairs. Tergite VI with 1 pair of spinal and 1 pair of pleural hairs. Tergite VII with 1 pair of spinal and 1 pair of marginal hairs. Tergite VIII with 1 pair of spinal hairs. Eye 3-faceted. Rostrum reaching abdominal segment I. Tarsi normal, thick and short. First tarsal segment chaetotaxy: 2, 2, 2. Second hind tarsal segment 0.052 in length. Siphunculus pore-shaped. Cauda small, circular at apex, with 2 short and sharp hairs. Anal plate with 4 hairs.

Discussion.—The new species is closely related to *Anomalosiphum tiomanensis* Martin 1994, but differs from it by: antennal segment V without secondary rhinaria (the latter: with 1–3 secondary rhinaria), ultimate rostral segment 0.47 times siphunculus length (the latter: 0.63 times), abdominal segment VII with 1 pair of short marginal processes (the latter: absent), spinopleural band on abdominal tergite VII fused with an irregular brown patch on tergites III–VI (the latter with tergite VII with a subtrapezoidal brown sclerite medially), length of hair on apex of process VIII as long as process VIII (the latter: 1.80 times).

Anomalosiphum pithecolobii Takahashi
1934

Anomalosiphum pithecolobii Takahashi
1934: 54; Martin and Agarwala 1994:
422; Tao 1990: 105.

Host plant.—*Pithecolobium lucidum*
Benth (Mimosaceae).

Distribution.—China: Guangdong, Hu-
bei, and Taiwan (Takahashi 1934).

Anomalosiphum takahashii Tao 1947

Anomalosiphum takahashii Tao 1947: 149–
155.

Host plant.—unknown.

Distribution.—China: Guangxi Auto.
Reg. (Beiliu County, 22.7°N, 110.3°E, Alt.
200 m, No. Y6745; Nanning City, Alt. 200
m, No. Y995), Sichuan (Xichang) (the ma-
terial from Tao 1947 and Martin and Agar-
wala 1994).

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